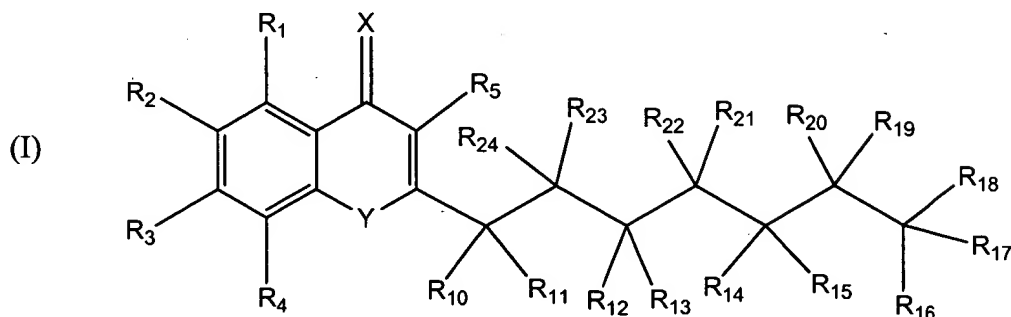


Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1. (Previously presented) A compound of formula I



wherein:

R₁-R₄ are independently H, alkyl, alkenyl, alkynyl, OH, NH₂, SH, O-R₆, N-R₇R₈, or a halogen;

R₅ is SH, OH, O-R₆, or N-R₇R₈;

R₆ is H or C₁-C₄ alkyl;

R₇ and R₈ are independently H, C₁-C₄ alkyl, O, or S;

X is S, O, or N-R₉;

Y is N-R₉;

R₉ is H, O, S, or C₁-C₄ alkyl;

R₁₀-R₁₃ are independently H, C₁-C₄ alkyl, OH, NH₂, SH, O-R₂₅, N-R₂₆R₂₇, or a halogen, or R₁₀ and R₁₁ taken together form a carbonyl, a sulfonyl or an imino

moiety, or R₁₂ and R₁₃ taken together form a carbonyl, a sulfonyl or an imino moiety;

R₁₄-R₂₄ are independently H, C₁-C₄ alkyl, OH, NH₂, SH, O-R₂₅, N-R₂₆R₂₇, or a halogen;

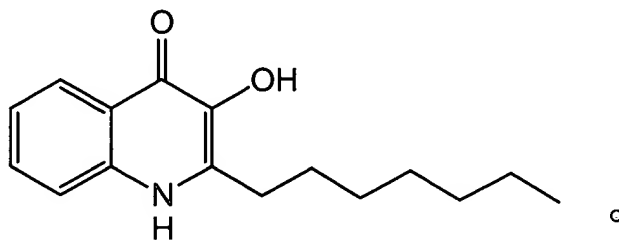
R₂₅ is H or C₁-C₄ alkyl; and

R₂₆ and R₂₇ are independently H, C₁-C₄ alkyl, O, or S; and salts thereof.

- Claim 2. (Cancelled)
- Claim 3. (Previously presented) The compound of claim 1 that is different than 2-heptyl-3-hydroxy-4-quinolone.
- Claim 4. (Previously presented) The compound of claim 1, wherein R₁₆, R₁₇, and R₁₈ are H.
- Claim 5. (Previously presented) The compound of claim 1, wherein R₂ is halogen.
- Claim 6. (Previously presented) The compound of claim 1, wherein R₃ is halogen.
- Claim 7. (Previously presented) The compound of claim 1, wherein R₄ is halogen.
- Claim 8. (Previously presented) The compound of claim 1, wherein X is S or N-R₉.
- Claim 9. (Previously presented) The compound of claim 1, wherein Y is N-R₉ and wherein R₉ is C₁-C₄ -alkyl.
- Claim 10. (Previously presented) The compound of claim 1, wherein R₅ is SH, O-R₆, or N-R₇R₈, and wherein R₆ is C₁-C₄ alkyl.

- Claim 11. (Previously presented) The compound of claim 1, wherein R_5 is SH, O- R_6 , or N- R_7R_8 .
- Claim 12. (Previously presented) The compound of claim 1, wherein X is O.
- Claim 13. (Original) The compound of claim 12, wherein R_5 is OH and Y is N- R_9 .
- Claim 14. (Cancelled)
- Claim 15. (Currently Amended) The compound of claim 14 1, wherein the alkylene chain contains one or more double bonds or triple bonds between the carbon atoms forming the skeleton alkylene side chain.
- Claim 16. (Currently Amended) The compound of claim 14 1, wherein one or more carbon atoms forming the skeleton of the alkylene side chain are replaced with sulfur or sulfur-substituted moieties.
- Claim 17. (Previously presented) The compound of claim 1, wherein the compound contains a chiral center.
- Claim 18. (Previously presented) The compound of claim 1, which is an optically active isomer.
- Claim 19. (Previously presented) The compound of claim 1, having the formula II:

(II)



- Claim 20. (Previously presented) A compound of claim 1 or 19, wherein said compound is an autoinducer molecule.
- Claim 21. (Previously presented) The compound of claim 20, wherein said compound regulates gene expression.
- Claim 22. (Previously presented) The compound of claim 21, wherein said compound regulates gene expression in bacteria.
- Claim 23. (Previously presented) The compound of claim 22, wherein said bacteria is *Pseudomonas aeruginosa*.
- Claim 24. (Previously presented) The compound of claim 23, wherein said gene expresses a virulence factor.
- Claim 25. (Previously presented) The compound of claim 24, wherein the virulence factor is elastase.
- Claim 26. (Previously presented) The compound of claim 20, wherein said compound regulates the activity of the LasR protein of *Pseudomonas aeruginosa*.
- Claim 27. (Previously presented) The compound of claim 20, wherein said compound regulates the activity of the RhlR protein of *Pseudomonas aeruginosa*.
- Claim 28. (Previously presented) The compound of claim 20, wherein said compound is isolated from culture media in which *Pseudomonas aeruginosa* is grown.
- Claim 29. (Previously presented) A compound of claim 1, wherein said compound modulates the autoinducer activity of 2-heptyl-3-hydroxy-4-quinolone.

- Claim 30. (Original) The compound of claim 29 that inhibits the autoinducer activity of 2-heptyl-3-hydroxy-4-quinolone.
- Claim 31. (Original) The compound of claim 29 that synergistically enhances the autoinducer activity of 2-heptyl-3-hydroxy-4-quinolone.
- Claim 32. (Previously presented) A compound of claim 1, wherein said compound modulates the activity of the LasR and/or the RhlR proteins of *Pseudomonas aeruginosa*.
- Claim 33. (Original) The compound of claim 32 that is an antagonist of the LasR and/or the RhlR proteins of *Pseudomonas aeruginosa*.
- Claim 34. (Previously presented) The compound of claim 32 that is an agonist of the LasR and/or the RhlR proteins of *Pseudomonas aeruginosa*.
- Claim 35. (Original) A pharmaceutical composition comprising a therapeutically effective amount of a compound of claim 1 and a pharmaceutically acceptable carrier therefor, wherein the compound inhibits the activity of one or more proteins in a microorganism that regulate expression of virulence factors.
- Claim 36. (Original) The pharmaceutical composition of claim 35, wherein the compound is present in an amount effective to affect the ability of the microorganism to initially infect or further infect an organism.
- Claim 37. (Original) The pharmaceutical composition of claim 35, wherein the microorganism is *Pseudomonas aeruginosa*.
- Claim 38. (Original) The pharmaceutical composition of claim 37, wherein the compound inhibits the activity of the LasR and/or the RhlR proteins of *Pseudomonas aeruginosa*.

Claim 39. (Original) The pharmaceutical composition of claim 38, wherein the compound inhibits the autoinducer activity of 2-heptyl-3-hydroxy-4-quinolone.

Claim 40. (Original) The pharmaceutical composition of claim 35, further comprising an antimicrobial, antibacterial or antifungal agent.

Claim 41. (Original) A method of inhibiting the infectivity of *Pseudomonas aeruginosa* comprising administering to a subject a therapeutically effective amount of a compound of claim 1, wherein the compound inhibits the activity of the LasR and/or the RhIR proteins of *Pseudomonas aeruginosa*.

Claim 42. (Original) The method of claim 41, wherein the compound inhibits the autoinducer activity of 2-heptyl-3-hydroxy-4-quinolone.

Claims 43-45 (Cancelled)

Claim 46. (Original) A culture medium for microorganisms comprising, as an added compound, an autoinducer molecule as defined in claim 20, at a concentration effective to stimulate or promote the metabolism, growth and/or recovery of the microorganism.

Claim 47. (Original) The culture medium of claim 46, wherein the microorganism is *Pseudomonas aeruginosa*.

Claim 48. (Original) The culture medium of claim 47, wherein the autoinducer is 2-heptyl-3-hydroxy-4-quinolone.

Claims 49-64 (Cancelled)